Claims

1. A rewinding machine for winding a web material (N) in logs (R), comprising: a path for feeding the web material towards a winding system (1, 2, 3); an interruption member (23; 101; 111; 201) to interrupt the web material at the end of winding of a log; a core feeder (19, 21) to insert winding cores (A1, A2) in succession in a channel (17) defined by a rolling surface (15) and a movable core feed member (13), arranged so that when a core is inserted in said channel (17) the web material (N) is between said core (A1, A2) and said feed member (13) and in contact with said feed member (13); characterized in that said interruption member is associated with said feed member (13) and positioned at least partly on the opposite side thereof with respect to said channel (17) to act on the web material (N) through said feed member (13).

2. Rewinding machine as claimed in claim 1, characterized in that said feed member (13) comprises a flexible member running between at least two rollers (1, 11) and that said interruption member (23; 101; 111;201) is positioned between said two rollers, within the closed path defined by said flexible member (13).

3. Rewinding machine as claimed in claim 2, characterized in that said flexible member comprises a plurality of parallel belts (13A) between which said interruption member operates.

4. Rewinding machine as claimed in claim 2 or 3, characterized in that one (1) of said rollers (1, 11) is a first winding roller of a surface winding cradle (1, 2, 3) forming said winding system.

5. Rewinding machine as claimed in one or more of the preceding claims, characterized in that said interruption member (23) is a suction member which applies a force on said web material, thus obstructing the feed thereof.

6. Rewinding machine as claimed in claims 2 and 5, characterized in that said suction member comprises a counter surface (33A; 55A) along which said flexible member runs (13).

7. Rewinding machine as claimed in one or more of the claims 1 to 5, characterized in that said interruption member (101; 111; 201) is a mechanical member which acts on the web material.

8. Rewinding machine as claimed in claim 7, characterized in that said mechanical member acts on the web material to apply a tension on it causing it to tear.

9. Rewinding machine as claimed in claim 7 or 8, characterized in that

said mechanical member acts on the web material obstructing the feed thereof.

10. Rewinding machine as claimed in one or more of the claims 7, 8 or 9, characterized in that said mechanical member is provided with tips or pins which penetrate the web material.

11. Rewinding machine as claimed in one or more of the claims 7 to 10, characterized in that said mechanical interruption member (101; 111;201) is synchronized with said core feeder (19; 21) to act on the web material (N) in conjunction with a winding core (A2) which is being fed along the channel (17).

12. Rewinding machine as claimed in one or more of the claims 7 to 11, characterized in that said mechanical interruption member (101) moves substantially orthogonally to the feed direction of the web material (N).

13. Rewinding machine as claimed in claim 12, characterized in that said mechanical interruption member (101) is controlled so as to pinch the web material N against a winding core (A2).

14. Rewinding machine as claimed in one or more of the claims 7 to 11, characterized in that said mechanical interruption member (111) is a rotating member.

15. Rewinding machine as claimed at least in claims 2 and 14, characterized in that said mechanical interruption member rotates around an axis (X) parallel to the axes of rotation of said two rollers (1; 11) around which said flexible member (13) runs, and at the moment when the web material is interrupted, protrudes towards said channel (17).

16. Rewinding machine as claimed in claim 14 or 15, characterized in that said mechanical interruption member (111) at least during the interruption of said web material (N) rotates at a peripheral speed different from the feed speed of the web material (N).

17. Rewinding machine as claimed at least in claim 4, characterized in that it comprises a second winding roller (2), defining with said first winding roller (1) a nip (5) for passage of the web material.

18. Rewinding machine as claimed in claim 17, characterized in that said nip is positioned substantially at the end of said channel (17) of the winding cores (A1, A2).

19. Rewinding machine as claimed in one or more of the preceding claims, characterized by glue application means for applying glue on said cores.

20. Rewinding machine as claimed in one or more of the preceding claims,

characterized by blower nozzles (81, 83, 85) to facilitate winding of the free edge around the winding core.

21. Rewinding machine as claimed in claim 10, characterized in that it comprises at least a first and a second set of blower nozzles (81, 83) arranged upstream and downstream of the web material suction application area.

22. Rewinding machine as claimed in claim 21, characterized in that said first and said second set of blower nozzles (81, 83) are arranged on the same side of the channel (17) of the cores (A1; A2).

23. Rewinding machine as claimed in claim 20, 21 or 22, characterized in that it comprises a third set of blower nozzles (85).

24. Rewinding machine as claimed in one or more of the claims 20 to 23, characterized in that at least one of said sets of blower nozzles is oscillating or rotating around a crosswise axis with respect to the feed direction of the web material.

25. Rewinding machine as claimed in claims 23 and 24, characterized in that said third set of blower nozzles (85) is oscillating.

26. Rewinding machine as claimed in at least claim 25, characterized in that said third set of blower nozzles (85) is arranged on the opposite side of the core channel (17) with respect to said first and said second set of blower nozzles (83, 85).

27. Rewinding machine as claimed in one or more of the claims 20 to 26, characterized in that it has no means for applying glue to the winding cores, the winding of each log beginning by means of said blower nozzles.

28. Rewinding machine as claimed in one or more of the preceding claims, characterized in that the path of the cores is constructed and arranged so that each core rolls along said path far enough to transfer part of the glue previously applied on said core to a portion of web material which will form the final free edge of the log (R).

29. Rewinding machine as claimed in one or more of the preceding claims, characterized in that said interruption member comprises at least one diverter element which acts on the web material across said feed member, protruding into said channel.

30. Rewinding machine as claimed in claim 29, characterized in that said diverter element comprises at least one elastic lamina.

31. Rewinding machine as claimed in claim 29 or 30, characterized in that said interruption member comprises an actuator which acts on said at least one diverter element to cause movement or deformation thereof across said feed member towards the inside of said channel

32. Rewinding machine as claimed in claim 31, characterized in that said actuator comprises at least one cam positioned, with respect to said feed member, on the opposite side of said channel.

33. Rewinding machine as claimed in one or more of claims 29 to 32, characterized in that said feed member comprises at least two flexible members, and that said diverter element is positioned between said at least two adjacent flexible members

34. Rewinding machine as claimed in claim 33, characterized in that said interruption member comprises a plurality of diverter elements positioned between adjacent flexible members.

35. Rewinding machine as claimed in one or more of claims 30 to 34, characterized in that said at least one elastic lamina is connected to a cross member positioned, with respect to said feed member, on the opposite side of said channel

36. Rewinding machine as claimed in claim 35, characterized in that said cross member runs crosswise to the feed direction of the core in said channel, said at least one elastic lamina extending from said cross member in the core feed direction

37. Rewinding machine as claimed in one or more of claims 28 t 36, characterized in that said diverter element is positioned and controlled to cause braking of the core and slackening of the web material upstream of the core.

38. Rewinding machine as claimed in one or more of the claims 28 to 36, characterized in that said diverter element is positioned and controlled to prevent slackening of the web material upstream of said core

39. Rewinding machine as claimed in one or more of claims 28 to 38, characterized in that activation of said elastic laminas is staggered over time to cause gradual breakage of said web material.

40. Method for the production of logs of wound web material, comprising the following phases:

feeding the web material to a winding system;

winding a first log (R) of web material around a first winding core (A1);

inserting a new winding core (A2) in a channel (17) defined between a rolling surface (15) and a movable core feed member (13) and feed said core along said channel, with the web material between said core and said feed member (13);

interrupting the web material at the end of winding of said first log (R), forming a final free edge (Lf) of said first log and an initial free edge (Li) for winding of a

second log (R);

characterized in that said web material is interrupted by an interruption member (23; 101; 111; 201) which acts on the web material (N) along the channel (17) on the side of the feed member (13) and across it.

41. Method as claimed in claim 40, characterized in that said winding system is a surface winding system comprising a winding cradle.

42. Method as claimed in claim 40 or 41, characterized in that said interruption member (23) applies timed suction on the web material.

43. Method as claimed in claim 42, characterized in that the web material is fed along a counter surface (33A; 55A), on which said suction is applied and along which said core feed member (13) runs.

44. Method as claimed in claim 43, characterized in that said counter surface is fixed.

45. Method as claimed in claim 42, 43 or 44, characterized in that said timed suction is applied downstream of the position of said core along the insertion path, causing interruption of the web material downstream of said core.

46. Method as claimed in claim 40 or 41, characterized in that said interruption member (101; 111; 201) is a mechanical member which acts mechanically on the web material.

47. Method as claimed in claim 46, characterized in that the web material is pinched between said mechanical interruption member and said second core (A2).

48. Method as claimed in claim 46 or 47, characterized in that said mechanical interruption member contacts the web material (N), the mechanical interruption member moving at a different speed from the feed speed of the web material.

49. Method as claimed in one or more of the claims 40 to 48, characterized in that glue (C) is applied on said winding cores (A1, A2).

50. Method as claimed in claim 49, characterized in that said glue is applied along at least one longitudinal line.

51. Method as claimed in claim 49 or 50, characterized in that at least a part (C1) of said glue (C) is transferred to a portion of web material belonging to the final free edge (Lf) to close the final free edge of said log.

52. Method as claimed in one or more of the claims 40 to 51, characterized in that winding of the initial free edge (Li) around said winding core is begun or

facilitated by means of one or more jets of air.

53. Method according to one or more of claims 40 to 52, characterized in that said interruption member includes at least one diverter element which is made to protrude into said channel when the web material has to be interrupted.

54. Method as claimed in claim 53, characterized in that said diverter element comprises an elastic lamina.

55. Method as claimed in claim 53 or 54, characterized in that said web material is interrupted causing a plurality of said diverter elements to protrude into said channel.

56. Method as claimed in claim 55, characterized in that said diverter elements are made to protrude into said channel staggered over time to cause gradual breakage of the web material.

57. Method for the production of logs of wound web material, comprising the following phases:

- feeding the web material along a feed path to a winding system;
- winding a first log of web material around a first winding core;
- interrupting the web material at the end of winding of said first log, elongating the path of the web material between said first log and a pinching point of the web material to form a free final edge of said first log and a free initial edge for winding of a second log.

58. Method as claimed in claim 57, in which said pinching point is defined by said new core and by a movable feed member.

59. Method as claimed in claim 57 or 58, in which said second core is inserted in a channel defined by a rolling surface and a movable core feed member, said second core moving along said channel with the web material between said second core and said feed member.

60. Method as claimed in claim 59, in which the path of the web material is elongated inserting a diverter element between said feed member and the web material downstream of the contact position between said second core and the web material, with respect to the feed direction of the web material.

61. Method as claimed in claim 60, in which said diverter element comprises an elastic lamina.

62. Rewinding machine for winding a web material in logs, comprising: a path for feeding the web material towards a winding system; and a core feeder to

insert winding cores in succession towards said winding system; characterized in that it comprises, along said feed path, a diverter element positioned and controlled to elongate the path of the web material between one completed log and a pinching point of the web material.

63. Machine as claimed in claim 62, characterized in that said pinching point is defined by a movable feed member and a core.

64. Machine as claimed in claim 62 or 63, characterized in that said diverter element comprises at least one elastic lamina.

65. Machine as claimed in claim 62 or 63 or 64, characterized in that said feed path of the web material extends along a core insertion channel defined by a rolling surface and a movable core feed member, arranged so that when a core is inserted in said channel, the web material is between said cores and said feed member and in contact with said feed member.

66. Machine as claimed in claim 65, characterized in that said diverter element is positioned and controlled for insertion between said movable feed member and the web material, protruding towards the inside of said channel.